

Switching device based on wave function size change

Application 10/686,914

Abstract

A method and a device for switching in computing, electronics, optoelectronics, detection etc. Wherein the switching state is relate to change in electric charge distribution denoted as particle wave function size in space. Each wave function size indicates different switched state. The switched states are changed by energy received or transmitted by the particle. This switching method can operate in room temperature. Preferred embodiment include layers 52 and 58 that have a common cross section, a silicon oxide insulators layer 56. A voltage bias is applied to Aluminum based metallic contact 60 relative to contact 62 the potential differencen on opposites sides of layer 52 raised and increased the kinetic energy inside layer 52 of silicon with phosphorous dopants , electrons wave function inside layer 52 expand into silicon layer 58, the expanded electric charge distribution in layer 58 changed the potential difference between Aluminum based metallic contacts 68,70 and changed conduction current in Aluminum conductor 64.

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References Cited

- E.Yahalomi, Arxiv, physics/0109013, (2001).
 E.Yahalomi, Arxiv,cond-mat/0310144, (2003).
 D. J. Gross and F. Wilczek, Phys. Rev. Lett 30 1343-6 (1973).
 H. D. Politzer, Phys. Rev.Lett 30, 1346-9 (1973).
 M.Avinun-Kalish et al Phys.Rev.lett 92, 156801-5 (2004)

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particle total energy and the switching between the device two states is done by changing the particle total energy comprising:

(a) said switch state is determined by electric field or electric force caused by said particle electric charge distribution in space or particle occupancy distribution in space denoted as wave function size in space.

(b) said wave function size depends on the particle energy and the switching between said device two states is done by changing the particle energy.

2. (Original) The device of claim 1 wherein one states is indicated by a certain particle wave function size in space and other state is indicated by a bigger particle wave function size in space.

3. (Cancelled)

4. (Cancelled)

5. (Previously presented) A switching device as in claim 1 wherein the wave function size depends on the particle total energy. The switching between the device two states is done by changing the particle total energy.

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